AF
IFW

OIPE IAP43
FEB 20 2007
PATENT & TRADEMARK OFFICE

PATENT APPLICATION
PO-7926
MD99-44

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF	)	GROUP NO.: 1711
RICHARD R. ROESLER ET AL	)	
SERIAL NUMBER: 10/678,782	)	EXAMINER: DUC TRUONG
FILED: OCTOBER 3, 2003	)	
TITLE: PROCESS FOR PREPARING ASPARTATES	)	

LETTER

Mail Stop - Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 2231-1450

Sir:

Enclosed is an Appeal Brief in the matter of the subject Appeal. Please charge the fee for filing the Brief, $500.00, to our Deposit Account Number 13-3848. Triplicate copies of this paper are enclosed.

Respectfully submitted,

By ____________________
Aron Preis
Attorney for Appellants
Reg. No. 29,426

Bayer MaterialScience LLC
100 Bayer Road
Pittsburgh, PA 15205-9741
Phone: (412) 777-3814
FACSIMILE PHONE NUMBER:
(412) 777-3902

f:\shared\kpl\da\PO7926.abl

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an enveloped addressed to: Commissioner for Patents, Alexandria, VA 22313-1450 February 14, 2007
Date

Aron Preis, Reg. No. 29,426
Name of applicant, assignee or Registered Representative

Signature

February 14, 2007
Date

PATENT APPLICATION
PO-7926
MD99-44

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPLICATION OF	)
	)
RICHARD R. ROESLER ET AL	) EXAMINING GROUP NO: 1711
	)
SERIAL NUMBER: 10/678,782	) CONFIRMATION NO.: 3887
	)
FILED: OCTOBER 3, 2003	) EXAMINER: DUC TRUONG
	)
TITLE: PROCESS FOR PREPARING ASPARTATES	)

MAIL STOP APPEAL BRIEF – PATENTS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ON APPEAL FROM THE PRIMARY EXAMINER TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPELLANTS' BRIEF UNDER 37 C.F.R. § 1.191

Sir:

The present Appeal Brief is submitted in support of the Notice of Appeal filed December 14, 2006.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450 February 14, 2007
Date

Aron Preis, Reg. No. 29,426
Name of applicant, assignee or Registered Representative

Signature

February 14, 2007
Date

TABLE OF CONTENTS

I

REAL PARTY IN INTEREST

The real party in interest for the application in this Appeal is assignee Bayer MaterialScience LLC, by virtue of the Assignment, recorded at Reel/Frame 016411/0377 on September 14, 2004 in the United States Patent and Trademark Office.

II

RELATED APPEALS AND INTERFERENCES

As the legal representative of Appellants, the undersigned attorney has no knowledge of any appeals or interferences directly related to this Appeal.

III

STATUS OF CLAIMS

Claims 1-4 of this patent application are pending. Claims 1-4 were finally rejected under 35 U.S.C. §103(a) in an Office Action mailed December 22, 2004 ("Final Office Action"), an Advisory Action mailed February 17, 2005 ("First Advisory Action") and an Advisory Action mailed June 3, 2005 ("Second Advisory Action"). An Appeal Brief was filed on November 29, 2005. Following the Examiner's Answer, a Request for Continued Examination was filed April 3, 2006. Claims 1-4 were rejected in the Office Action dated May 1, 2006 (the "May 2006 Action") and finally rejected in the Final Office Action dated September 26, 2006 (the "September 2006 Action").

Four pending claims, Claims 1-4, are at issue in this Appeal. Claims 1 and 2 are independently patentable. Claims 3 and 4 stand or fall with Claim 1.

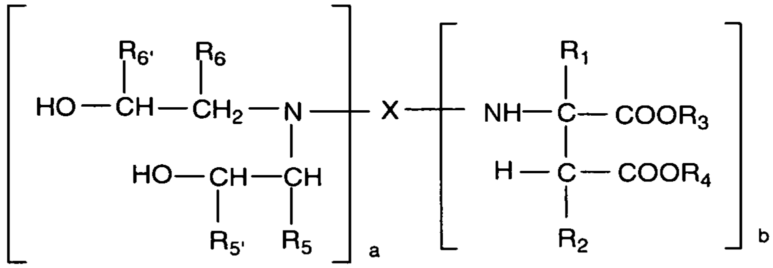
IV

STATUS OF AMENDMENTS

No claims were amended after final rejection. A copy of the claims involved in this Appeal is contained in the Appendix attached hereto.

V
SUMMARY OF CLAIMED SUBJECT MATTER

In one embodiment set forth in Claim 1, Appellants have discovered an aspartate of the formula:



where

X represents an m-valent organic residue obtained by removing the primary amino group or groups from a mono or polyamine which has (cyclo)aliphatically bound amino groups and a number average molecular weight of 60 to 6000, and which may contain further functional groups that either are reactive with isocyanate groups or are inert to isocyanate groups at temperatures of up to 100°C,

R_1 and R_2 may be identical or different and represent hydrogen or organic groups which are inert towards isocyanate groups at a temperature of $100^{\circ}C$ or less,

R_3 and R_4 may be identical or different and represent organic groups which are inert towards isocyanate groups at a temperature of $100^{\circ}C$ or less,

R_5 represents hydrogen or together with $R_{5'}$ and the carbon atoms to which they are connected forms a six-membered cycloalkyl group, with

said cycloalkyl group being substituted with from 0 to 3 alkyl groups having from 1 to 3 carbon atoms,

$R_{5'}$ represents a moiety selected from the group consisting of i) C_1 to C_8 alkyl groups which may be interrupted with an oxygen atom, ii) C_6 to C_{10} aryl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms and iii) C_6 to C_{12} cycloalkyl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms,

R_6 represents hydrogen or together with $R_{6'}$ and the carbon atoms to which they are connected forms a six-membered cycloalkyl group, with said cycloalkyl group being substituted with from 0 to 3 alkyl groups having from 1 to 3 carbon atoms,

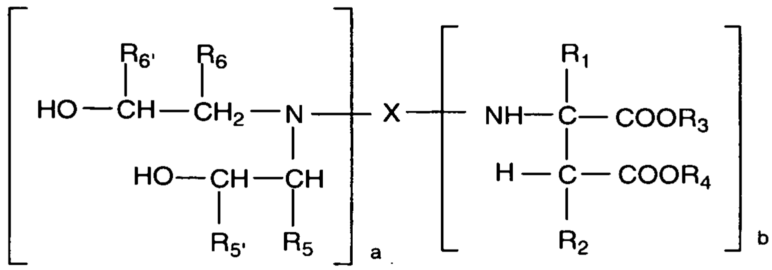
$R_{6'}$ represents a moiety selected from the group consisting of i) C_1 to C_8 alkyl groups which may be interrupted with an oxygen atom, ii) C_6 to C_{10} aryl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms and iii) C_6 to C_{12} cycloalkyl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms,

with the proviso that R_5 and R_6 are the same and $R_{5'}$ and $R_{6'}$ are the same, and

a and b represent integers of from 1 to 5, provided that the sum of a and b is from 2 to 6.

See original Claim 1 and page 3, line 12 to page 5, line 4 of the specification.

In one embodiment set forth in Claim 2, Appellants have discovered a process for preparing an aspartate of the formula:



where

X represents an m-valent organic residue obtained by removing the primary amino group or groups from a mono or polyamine which has (cyclo)aliphatically bound amino groups and a number average molecular weight of 60 to 6000, and which may contain further functional groups that either are reactive with isocyanate groups or are inert to isocyanate groups at temperatures of up to 100°C,

R_1 and R_2 may be identical or different and represent hydrogen or organic groups which are inert towards isocyanate groups at a temperature of $100^{O}C$ or less,

R_3 and R_4 may be identical or different and represent organic groups which are inert towards isocyanate groups at a temperature of $100^{O}C$ or less,

R_5 represents hydrogen or together with $R_{5'}$ and the carbon atoms to which they are connected forms a six-membered cycloalkyl group, with said cycloalkyl group being substituted with from 0 to 3 alkyl groups having from 1 to 3 carbon atoms,

$R_{5'}$ represents a moiety selected from the group consisting of
i) C_1 to C_8 alkyl groups which may be interrupted with an oxygen atom,

ii) C_6 to C_{10} aryl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms and iii) C_6 to C_{12} cycloalkyl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms,

R_6 represents hydrogen or together with $R_{6'}$ and the carbon atoms to which they are connected forms a six-membered cycloalkyl group, with said cycloalkyl group being substituted with from 0 to 3 alkyl groups having from 1 to 3 carbon atoms,

$R_{6'}$ represents a moiety selected from the group consisting of i) C_1 to C_8 alkyl groups which may be interrupted with an oxygen atom, ii) C_6 to C_{10} aryl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms and iii) C_6 to C_{12} cycloalkyl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms,

with the proviso that R_5 and R_6 are the same and $R_{5'}$ and $R_{6'}$ are the same, and

a and b represent integers of from 1 to 5, provided that the sum of a and b is from 2 to 6, comprising

A) reacting at a temperature of 0 to 100°C, in solution or in the absence of a solvent and at an equivalent ratio of primary amino groups in component a) to C=C double bonds in component b) of from about 1.1:1 to about 3.0:1

a) mono or polyamines corresponding to formula (II)

$$X[-NH_2]_m \qquad (II)$$

with

b) compounds corresponding to formula (III)

$$R_3OOC-C(R_1)=C(R_2)-COOR_4 \qquad (III)$$

wherein

X, R_1, R_2, R_3 and R_4 are as defined above and

m represents an integer of from 2 to 6, and

B) reacting the resultant product with an oxirane compound selected from the group consisting of alkylene oxides, cycloalkylene oxides, and phenylglycidyl ether.

See original Claim 2 and specification at page 5, lines 6-28.

The aspartates of the present invention may be used directly after completion of the synthesis process because, in contrast to prior art aspartates, an approximately complete degree of conversion is achieved. The aspartates of the present invention are toxicologically and physiologically harmless and exhibit a reasonable, rather than vigorous, reactivity towards isocyanates. Due to their low viscosity they are a suitable alternative to environmentally polluting organic solvents previously used and may therefore be used in high-quality low-solvent (or solvent free) two-component coating compositions.

VI

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Has a Prima Facie Case of Obviousness Under 35 U.S.C. §103(a) over U.S. 5,243,012 to Wicks et al. ("Wicks"), U.S. 5,236,741 to Zwiener et al. ("Zwiener '741"), or U.S. 5,126,170 to Zwiener et al. ("Zwiener '170) Been Established?

VII

ARGUMENT

The Required Prima Facie Case of Obviousness under 35 U.S.C. §103(a) over Wicks, Zwiener '741 or Zwiener '170 Has Not Been Established.

A. The Rejection

Claims 1-4 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. 5,243,012 to Wicks et al., U.S. 5,236,741 to Zwiener et al. or U.S. 5,126,170 to Zwiener et al.

The reasons for rejection are set forth in the Office Action of August 25, 2004 ("Office Action"), the Final Office Action, the First Advisory Action, the Second Advisory Action, the Examiner's Answer, the May 2006 Action and the September 2006 Action, summarized as follows:

In the Office Action it is alleged that Wicks, Zwiener '741 and Zwiener '170 disclose a polyurea or polyurethane coating comprising at least one compound of the formula (I) by reacting primary amines of the formula (II) with maleic or fumaric acid esters of the formula (III) (as those formulas are set forth in the references). It is further alleged that the three references disclose the coating composition comprising a polyisocyanate and said compound [of Formula I] to form a binder, polyurethane and polyurea coatings. (Office Action at pages 2-3).

It is acknowledged in the Office Action that the disclosures of the references differ from the instant claims in that they do not disclose the claimed formula derived from the reaction products of primary amines with maleic or fumaric acid esters then with an oxirane compound comprising alkylene oxide. It is nevertheless asserted that the references do disclose the reaction products of primary polyamines with maleic or fumaric acid esters under the same conditions. The references are said to further disclose the use of polyether polyols in the preparation of prepolymers and semi-prepolymers, and preparation of polyether polyols by the alkoxylation of starting materials comprising alkylene oxide such as ethylene and/or propylene

oxide, which may be introduced into the alkoxylation in any sequence or as a mixture (Office Action at page 3).

It is asserted to be obvious to one of ordinary skill in the art to react the reaction product of primary polyamines with maleic or fumaric acid esters then with alkylene oxide to form the claimed aspartate of the claimed formula since the references clearly disclose that the alkylene oxide can be added in any sequence, in the absence of a showing of unexpected results (Office Action at page 3).

In the Final Office Action Appellant's arguments filed on November 24, 2004 were characterized as not persuasive. The reasons for the final rejection were stated as follows:

It is noted that the aspartate of the claimed formula is derived from the process of Claim 2. The reference is said to disclose the required reactants and the process conditions in the claimed step A (as stated in the previous Office Action) (Final Office Action at page 2). Appellant's arguments are characterized as based on the claimed step B, in that the polyhydroxy compounds of the references are used to make isocyanate group containing prepolymers with polyisocyanates. It is alleged that the arguments are incorrect since the references disclose

> "polyether polyols are obtained by the alkoxylation of suitable starting materials and are suitable for the preparation of the isocyanate group containing prepolymers and semi-prepolymers. Examples of suitable starting molecules for the polyether polyols include monomeric polyols, water organic amines having at least two NH bonds and mixtures of these starting molecules. Ethylene oxide and propylene oxide are suitable alkylene oxides for the alkoxylation reaction. These alkylene oxides may be introduced into the alkoxylation reaction in any sequence or as a mixture",

citing column 4, lines 29-41 of Wicks; column 3, line 60; column 4, line 4 of '471; and column 3, lines 53-65 of '170 (Final Office Action at pages 2-3).

It is asserted to be "clear to see" from the references that the alkylene oxides are used for starting materials other than isocyanate group containing prepolymers and can react with a mixture in any sequence such as after the reaction of the claimed step A. Therefore, the claimed aspartate is alleged to be inherent in the prior art with the claimed definitions of each variation. Appellant's arguments were

characterized as based on the characteristics of the variations in the claimed formula but were not persuasive (Final Office Action at page 3).

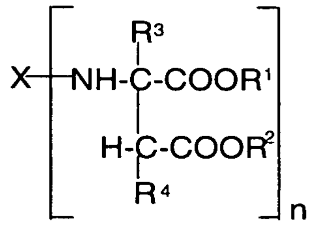
A response submitted after final rejection on February 1, 2005 was deemed not to place the application in condition for allowance for the reasons stated in the First Advisory Action: Appellant's arguments are characterized as based on differences between the claimed chemical structure and the prior art, whereas the Examiner's arguments are based on the mechanism to form the products of the claimed formula. The references are asserted to disclose the product which is the intermediate product from the claimed step A before reacting with an oxirane in step B to form the product of the claimed formula, and to "clearly" disclose the same reactants under the same conditions with the claimed process then with alkylene oxides. These reasons are repeated in the Second Advisory Action.

In the Examiner's Answer to the Appeal Brief it is asserted that if an excess of alkylene oxide is used to form the polyether polyols, after forming the polyether polyols the remaining alkylene oxide can react with the aspartate intermediate to form the compounds of the present invention. It is further asserted that the question is "whether ethylene oxide or propylene oxide *can* (emphasis added) react with the resulting product of step A" (the aspartate intermediate). These assertions were repeated in the May 2006 Action, in which it was further stated that Applicants' arguments were not persuasive and "not commensurate in scope" with the claims, because the claimed process does not disclose reactants or molar ratios to form the polyether polyols, and in the September 2006 Action, in which the Examiner also asks "How does Applicant know that there is no residual alkylene oxide after forming polyether polyols?". It is asserted that if the oxirane is used in excess, after forming the polyether polyol the remaining oxirane can react with the intermediate to form the aspartates of the present invention.

B. <u>The Prior Art</u>

Wicks, Zwiener '170 and Zwiener '741 all disclose compositions for the preparation of a polyurea or polyurethane coating which contain a) a polyisocyanate

component and b) at least one compound generally corresponding to the Formula I,



(I)

as defined more fully in those patents.

<u>Component (a), the polyisocyanate component:</u>

As described in all three references, and using Wicks as an example, the polyisocyanate component can be prepared from known monomeric polyisocyanates (column 2, lines 47 et seq.); derivatives of monomeric polyisocyanates such as polyisocyanates containing biuret, uretdione, oxadiazinetrione, urethane, allophanate and isocyanurate groups (column 3, lines 6-33); polyisocyanates containing poly(oxyalkylene) chains, prepared by reacting any of the above polyisocyanates with monofunctional alcohols containing oxyalkylene chains (column 3, lines 34-42); and isocyanate-group containing prepolymers and semi-prepolymers which are prepared from the monomeric polyisocyanates or polyisocyanate adducts described previously and organic polyhydroxyl compounds (column 3, lines 48-52).

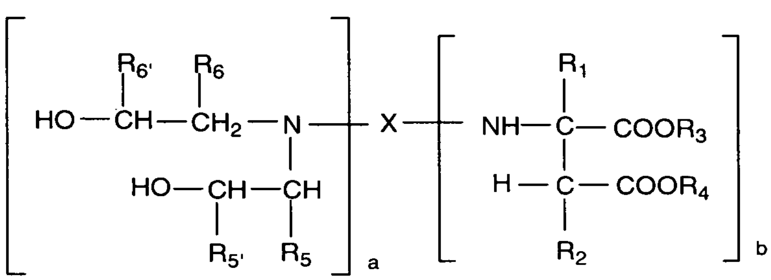
As described in Wicks at column 4, lines 5 et seq., the prepolymers and semi-prepolymers are preferably prepared from relatively high molecular weight polyhydroxyl compounds. Suitable polyhydroxyl compounds include polyester polyols (column 4, line 18) and polyether polyols (column 4, line 29). Polyether polyols are obtained in a known manner from alkoxylation of suitable starting materials (column 4, line 29), which include monomeric polyols, water, organic polyamines, and ethylene oxide and/or propylene oxide (column 4, line 37). The alkylene oxides may be introduced into the alkoxylation reaction in any sequence or as a mixture (column 4, lines 39-40).

Component (b), the aspartate

Component b, compounds of Formula I in Wicks, Zwiener '741 and Zwiener '170, are prepared in a known manner (Wicks at column 5, line 7) by reacting primary polyamines (column 5, line 11) with optionally substituted maleic or fumaric acid esters (column 5, line 14). The method of synthesizing compounds of Formula I is further described in Wicks at column 5, lines 48-58, which states that preparation may be carried out at a temperature of 0-100°C, using the starting materials in such proportions such that at least one olefinic double bond is present for each primary amino group. Excess starting materials may be removed by distillation after the reaction, which may be carried out solvent-free or in the presence of a suitable organic solvent.

C. **The Required Prima Facie Case of Obviousness Under 35 U.S.C. § 103 Has Not Been Established**

The present invention is generally directed to aspartates of the formula:



as defined more fully in the application and Claim 1. The aspartates of the present invention are prepared by reacting mono or polyamines corresponding to formula (II)

$$X[\text{-}NH_2]_m \qquad \text{(II)}$$

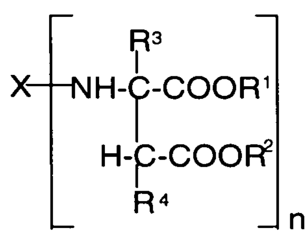
with compounds corresponding to formula (III)

$$R_3OOC\text{-}C(R_1)=C(R_2)\text{-}COOR_4 \qquad \text{(III)}$$

and reacting the resultant product with an oxirane compound selected from the group consisting of alkylene oxides, cycloalkylene oxides, and phenylglycidyl ether. Applicant responds to the major points raised in the rejections as follows:

1. The alkylene oxides described in the references do not "react in any sequence" to produce the claimed compounds.

Wicks, Zwiener '170 and Zwiener '741 all disclose compositions for the preparation of a polyurea coating which contain a) a polyisocyanate component and b) at least one compound generally corresponding to the Formula I,



(I)

as defined more fully in those patents. There is absolutely no disclosure in any of the three references of any further processing steps of compounds of Formula I that result in the claimed compounds. Appellants do not dispute the Examiner's assertion that the "X-aspartate" intermediate portion of the molecules shown in Claim 1 are shown in Wicks, Zwiener '170 and Zwiener '741, and that the method of making this portion of the compounds claimed is generally as described in the cited patents (this is also more fully explained below).

It is asserted in the Final Office Action that the alkylene oxides disclosed in the references are used for starting materials other than isocyanate group containing prepolymers, and that alkylene oxides can react with a mixture in any sequence such as after the reaction of the claimed step A. Appellants disagree with this characterization of the references. There is simply no disclosure in any of the cited references that supports this assertion. Both Wicks and Zwiener state (for example in Zwiener '741, at column 3, line 60 to column 4, line 4) that polyether polyols can be prepared by alkoxylation of suitable starting materials (as shown above in (1)),

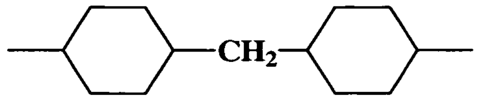
and that alkylene oxides may be introduced into the alkoxylation reaction in any sequence or as a mixture. <u>The alkoxylation reaction referred to is the alkoxylation of the starting materials to produce the polyether polyols</u>. There is no other alkoxylation occurring, nor any language suggesting that it is occurring anywhere else in the reference, and therefore <u>no other interpretation of this language is reasonable</u>. Neither Wicks nor Zwiener teach or even remotely suggest that an oxirane is reacted with the aspartate intermediate, as in the present invention, to produce the novel compounds now claimed.

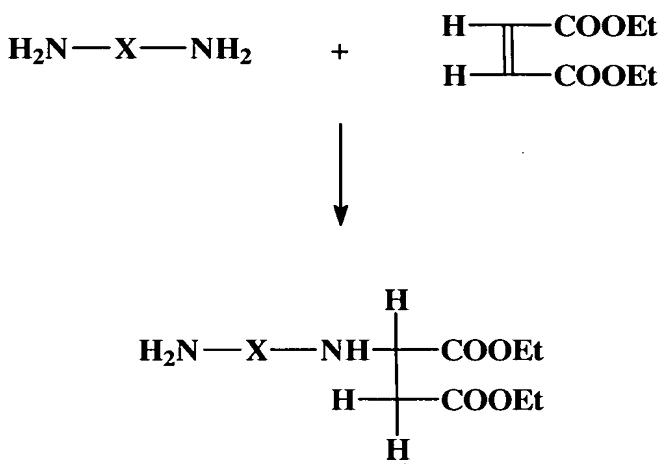
2. The compounds of the present invention are not inherently formed in the processes shown in the references.

It is asserted in the Office Action, the Final Office Action and the First and Second Advisory Actions that the compounds of Claim 1 are somehow inherently formed in the compositions disclosed in the three patents, as the patents are asserted to show "the same reactants under the same conditions as the claimed process then with alkylene oxides... etc". Appellants respectfully submit that the claimed compounds are not inherently formed or disclosed in any of the patents cited above, nor is the process of making these compounds disclosed, for the following reasons.

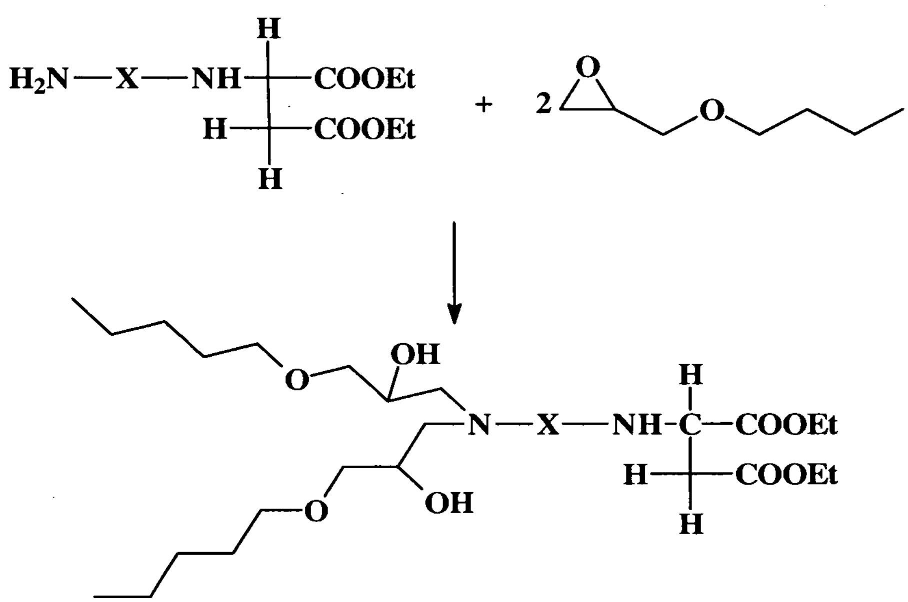
In the present invention, in the first example, propylene oxide adduct of amino-aspartate is reacted with isocyanate functional isocyanurate based on hexamethylene diisocyanate. The preferred diamine is hexamethylene diamine; while the preferred maleate is diethyl maleate.

The first step is the preparation of the monoaspartate

[X = ]:

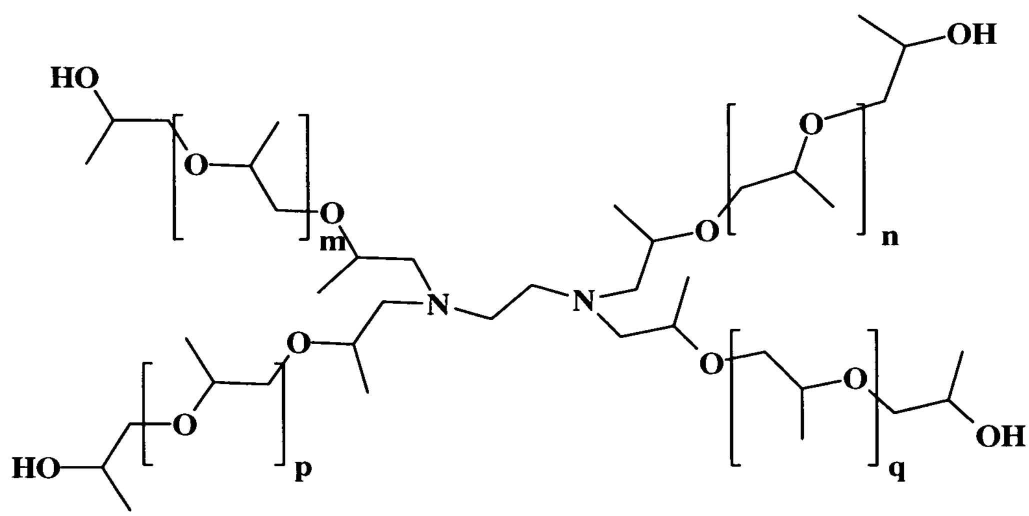


The second step is the conversion of the primary amine into a bis-ethanol amine by use of butyl glycidyl ether:

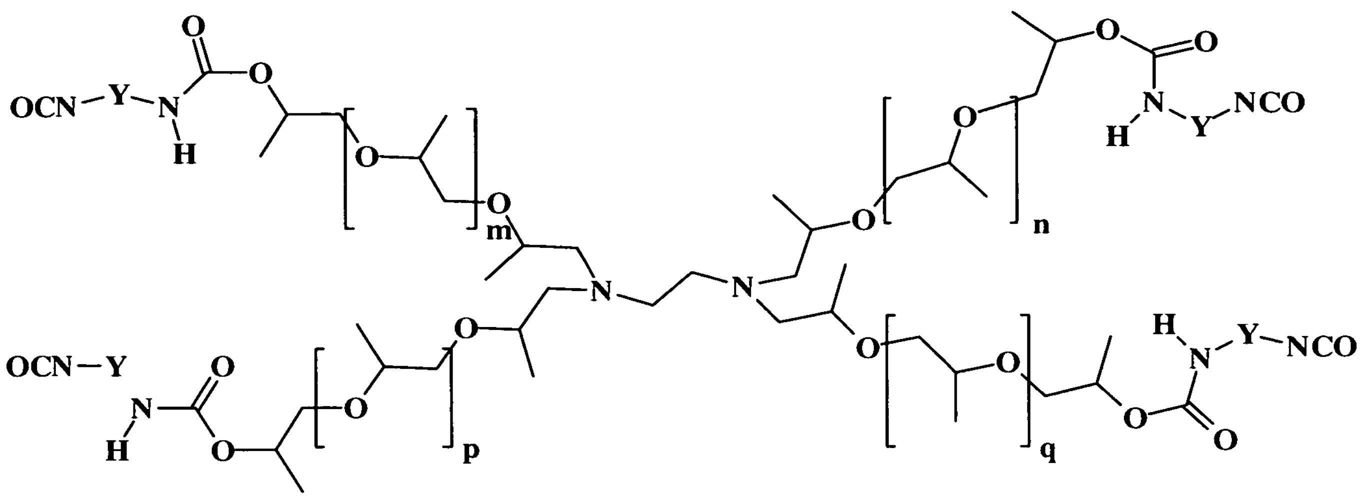


As can be seen in the above discussion, the oxirane compound is reacted directly with the aspartate intermediate. No such reaction occurs in the cited patents. None of the cited patents describe reacting an alkylene oxide (or any other oxirane such as cycloalkylene oxides or phenylglycidyl ether, as recited in Claim 2) directly with an aspartate, nor is this reaction inherently occurring in the process/composition described in these patents.

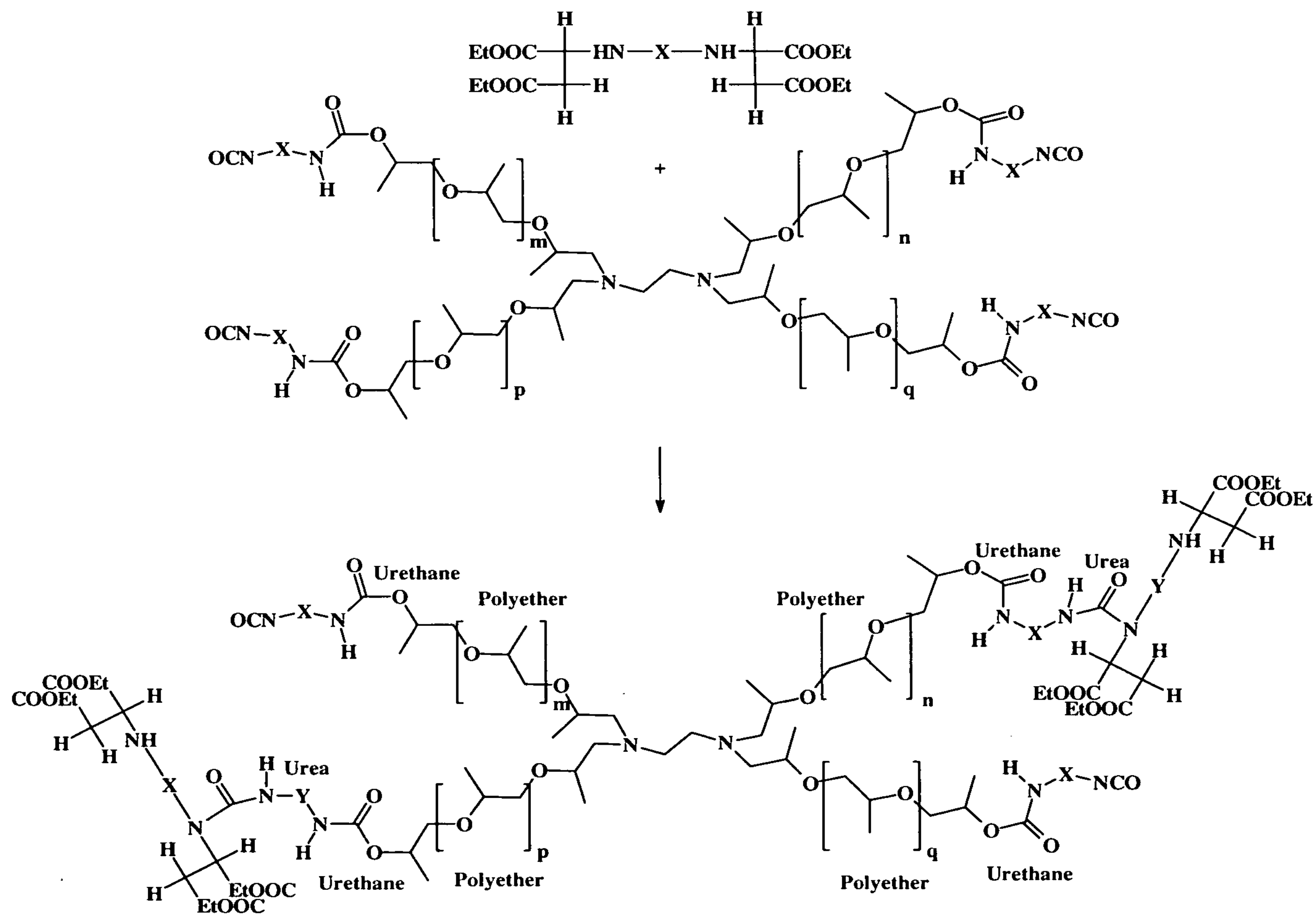
Using Wicks as an example of the reaction chemistry occurring in all three patents, Wicks describes that the preferred polyether-polyisocyanate adducts are prepared from an amine started polypropylene oxide tetraol with a molecular weight of 1000 to 5000. The following uses ethylene diamine as the starter diamine, where m + n + p + q = ~10 to 80:



The polyether tetraol is reacted with a diisocyanate, for example, hexamethylene diisocyanate to prepare the prepolymer [Y = $(CH_2)_6$]:



This prepolymer is then reacted with a diaspartate to give a polyether-urethane-urea:



Of course, the isocyanate will continue to react with secondary amine to give the crosslinked network. The crosslinked network will consist of urethane, urea and polyether bonds.

A new theory of inherency is presented in the Examiner's Answer to the Appeal Brief. It is asserted that if an excess of alkylene oxide is used to form the polyether polyols, after forming the polyether polyols the remaining alkylene oxide can react with the aspartate intermediate to form the compounds of the present invention. It is asserted that the question is "whether ethylene oxide or propylene oxide *can* (emphasis added) react with the resulting product of step A" (the aspartate intermediate). Applicant explained in response that there is no alkylene oxide remaining in any polyol used to make the prepolymers of Wicks or Zwiener, and thus the reaction with the aspartate intermediate is not inherently occurring. Applicant based this statement on the following information.

<u>The process of making polyether polyols from alcohols and alkylene oxides is well known</u>. In the process, a catalyst and a starter alcohol are placed in a reactor, the reactor is heated, and the alkylene oxide is continuously fed into the reactor. When the desired molecular weight of the end product is reached, the reaction is stopped (the alkylene oxide feed is discontinued). During polymerization, the pressure of the reactor is monitored. If the pressure of the reactor increases, this is an indication that the alkylene oxide is not reacting, perhaps, for example, due to the catalyst becoming inactive. After the reaction is stopped, the pressure begins to drop as the alkylene oxide remaining in the reactor is used up. When the pressure is no longer decreasing, this indicates that all alkylene oxide has been consumed. The product is further vacuum stripped at high temperature, under nitrogen, to remove any remaining small amount of alkylene oxide. This process is described, for example, in <u>The Polyurethanes Book</u>, Lee, S. and Randall, D. editors, John Wiley and Sons Ltd., 2002, pp.94-95.

<u>There is no alkylene oxide remaining in a polyether polyol product</u>. As is well known to one skilled in the art, ethylene oxide and propylene oxide are extremely toxic and reactive materials. Both are known to cause cancer. See, e.g., the attached Sigma-Aldrich MSDS for each of these materials, describing in detail the

hazards of using these compounds. Because of the toxicity and reactivity of the alkylene oxides, their presence in any commercial polyol would be extremely undesirable. Additionally, if any alkylene oxide did remain in the end product, it would interfere with the OH number, because it would react with water to produce ethylene glycol, for example, which would titrate as a diol. This does not in fact occur, as the titration is typically at the theoretical value.

As further evidence that there is no alkylene oxide in commercial polyether polyols, Applicant submitted the MSDSs for five commercial polyols prepared by Bayer MaterialScience and by Dow Chemical Company with the Request for Continued Examination. All five MSDSs state that the material is non-hazardous. If any alkylene oxide remained in the polyether polyol, this would be reported in the MSDS.

In the September 2006 Action the Examiner asks "How does Applicant know that there is no residual alkylene oxide after forming polyether polyols?" The Examiner continues to maintain, in the face of objective evidence to the contrary, that polyether polyols "could have" residual alkylene oxide, and that the reaction of an alkylene oxide with the intermediate is inherently occurring in the process described in the references. This is simply not the case.

3. Applicant's arguments are commensurate in scope with the claimed invention.

It is asserted in the both the May 2006 Action and the September 2006 Action that Applicant's arguments are not persuasive because they are somehow not commensurate in scope with the claims, because the claimed process doesn't disclose reactants or molar ratios to form polyether polyols. As pointed out in response, this is technically a correct statement, but illogical, because polyether polyols are not used in the claimed process, nor are they anywhere made or used in the present invention. This assertion, much like previous assertions, makes no sense at all, and makes it abundantly clear that the Examiner does not interpret the cited references from the point of view of a skilled artisan.

To simplify concepts, Applicant explained that the process of making the claimed aspartates (and coatings based on the aspartates) of the present invention is exemplified as follows:

mono- or polyamine	+	maleic/fumaric acid ester	→	**intermediate**	(A)
intermediate	+	oxirane	→	claimed aspartate	(B)
claimed aspartate	+	polyisocyanate	→	coating	(C)

In the Wicks and Zwiener references, the following processes are disclosed:

polyamine/polyol	+	oxirane	→	polyether polyol	(1)
polyether polyol	+	isocyanate	→	polyisocyanate prepolymer	(2)
mono- or polyamine	+	maleic/fumaric acid ester	→	**intermediate**	(3)
polyisocyanate prepolymer	+	**intermediate**	→	coating	(4)

In both the present invention and the cited references, the **intermediate** is the same. As can be seen in the above comparison, the preparation of polyether polyols is neither described nor claimed in the present invention, and the addition of an oxirane compound to the intermediate is not shown in the references. Applicants would like to know how they can include molar ratios and amounts of reactants that are not even used or claimed.

Applicants respectfully submit Wicks, Zwiener '741 and Zwiener '170 simply do not teach or remotely suggest the reaction of an oxirane with an aspartate intermediate (nor is this reaction inherently occurring), as in the present invention, to arrive at the claimed compounds.

VIII

CONCLUSION

Appellants respectfully submit that all pending claims, Claims 1- 4, are patentable and that the present application is in condition for allowance; such action is respectfully requested at an early date.

Respectfully submitted,

By ______________________
Aron Preis
Attorney for Appellants
Reg. No. 29,426

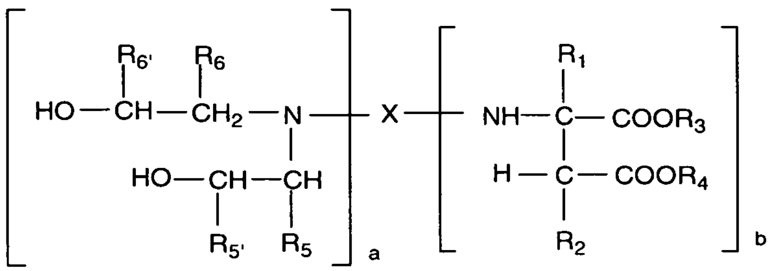
Bayer MaterialScience LLC
100 Bayer Road
Pittsburgh, Pennsylvania 15205-9741
PHONE: (412) 777-3814
FACSIMILE PHONE NUMBER:
412-777-3902

f:\shared\kpl\da\PO7926.apb

IX

CLAIMS APPENDIX

1. An aspartate of the formula:



where

X represents an m-valent organic residue obtained by removing the primary amino group or groups from a mono or polyamine which has (cyclo)aliphatically bound amino groups and a number average molecular weight of 60 to 6000, and which may contain further functional groups that either are reactive with isocyanate groups or are inert to isocyanate groups at temperatures of up to 100°C,

R_1 and R_2 may be identical or different and represent hydrogen or organic groups which are inert towards isocyanate groups at a temperature of 100°C or less,

R_3 and R_4 may be identical or different and represent organic groups which are inert towards isocyanate groups at a temperature of 100°C or less,

R_5 represents hydrogen or together with $R_{5'}$ and the carbon atoms to which they are connected forms a six-membered cycloalkyl group, with said cycloalkyl group being substituted with from 0 to 3 alkyl groups having from 1 to 3 carbon atoms,

$R_{5'}$ represents a moiety selected from the group consisting of

i) C_1 to C_8 alkyl groups which may be interrupted with an oxygen atom, ii) C_6 to C_{10} aryl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms and iii) C_6 to C_{12} cycloalkyl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms,

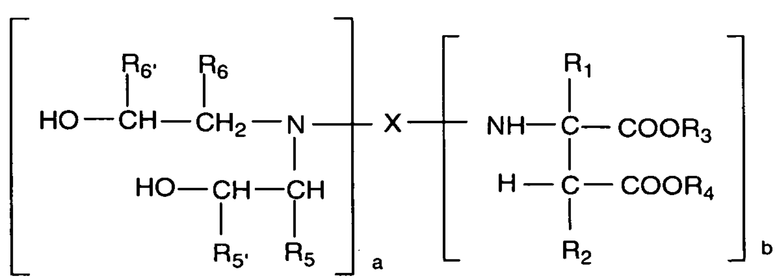
R_6 represents hydrogen or together with $R_{6'}$ and the carbon atoms to which they are connected forms a six-membered cycloalkyl group, with said cycloalkyl group being substituted with from 0 to 3 alkyl groups having from 1 to 3 carbon atoms,

$R_{6'}$ represents a moiety selected from the group consisting of i) C_1 to C_8 alkyl groups which may be interrupted with an oxygen atom, ii) C_6 to C_{10} aryl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms and iii) C_6 to C_{12} cycloalkyl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms,

with the proviso that R_5 and R_6 are the same and $R_{5'}$ and $R_{6'}$ are the same, and

a and b represent integers of from 1 to 5, provided that the sum of a and b is from 2 to 6.

2. A process for preparing an asparatate of the formula:



where

X represents an m-valent organic residue obtained by removing the primary amino group or groups from a mono or polyamine which has

(cyclo)aliphatically bound amino groups and a number average molecular weight of 60 to 6000, and which may contain further functional groups that either are reactive with isocyanate groups or are inert to isocyanate groups at temperatures of up to 100°C,

R_1 and R_2 may be identical or different and represent hydrogen or organic groups which are inert towards isocyanate groups at a temperature of 100°C or less,

R_3 and R_4 may be identical or different and represent organic groups which are inert towards isocyanate groups at a temperature of 100°C or less,

R_5 represents hydrogen or together with $R_{5'}$ and the carbon atoms to which they are connected forms a six-membered cycloalkyl group, with said cycloalkyl group being substituted with from 0 to 3 alkyl groups having from 1 to 3 carbon atoms,

$R_{5'}$ represents a moiety selected from the group consisting of i) C_1 to C_8 alkyl groups which may be interrupted with an oxygen atom, ii) C_6 to C_{10} aryl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms and iii) C_6 to C_{12} cycloalkyl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms,

R_6 represents hydrogen or together with $R_{6'}$ and the carbon atoms to which they are connected forms a six-membered cycloalkyl group, with said cycloalkyl group being substituted with from 0 to 3 alkyl groups having from 1 to 3 carbon atoms,

$R_{6'}$ represents a moiety selected from the group consisting of i) C_1 to C_8 alkyl groups which may be interrupted with an oxygen atom, ii) C_6 to C_{10} aryl groups, which may be substituted with up to three

alkyl groups having from 1 to 3 carbon atoms and iii) C_6 to C_{12} cycloalkyl groups, which may be substituted with up to three alkyl groups having from 1 to 3 carbon atoms,

with the proviso that R_5 and R_6 are the same and $R_{5'}$ and $R_{6'}$ are the same, and

a and b represent integers of from 1 to 5, provided that the sum of a and b is from 2 to 6, comprising

A) reacting at a temperature of 0 to 100°C, in solution or in the absence of a solvent and at an equivalent ratio of primary amino groups in component a) to C=C double bonds in component b) of from about 1.1:1 to about 3.0:1

a) mono or polyamines corresponding to formula (II)

$$X[-NH_2]_m \qquad (II)$$

with

b) compounds corresponding to formula (III)

$$R_3OOC\text{-}C(R_1)\text{=}C(R_2)\text{-}COOR_4 \qquad (III)$$

wherein

X, R_1, R_2, R_3 and R_4 are as defined above and

m represents an integer of from 2 to 6, and

B) reacting the resultant product with an oxirane compound selected from the group consisting of alkylene oxides, cycloalkylene oxides, and phenylglycidyl ether.

3. A two-component coating composition which comprises, as binder,

a) a polyisocyanate component and

b) an isocyanate-reactive component containing

b1) the aaspartate of Claim 1.

b2) optionally other isocyanate-reactive compounds,

wherein the equivalent ratio of isocyanate groups to isocyanate-reactive groups is from about 0.8:1 to about 2.0:1.

4. A prepolymer containing urea, urethane, allophanate and/or biuret structures comprising the reaction product of a polyisocyanate with the aspartate of Claim 1.

X

EVIDENCE APPENDIX

None.

XI

RELATED PROCEEDINGS APPENDIX

None.